IN THE CLAIMS

Please amend claim 1 and cancel claim 30 (without prejudice to including it in a later-filed continuation application), as follows:

What is claimed is:

Listing of Claims:

1. (Currently Amended) A computer-implemented system, comprising:

a first executing process that:

implements a first continuous-time model to simulate a first physical subsystem, the first model being programmed in a first language and having a first state variable; and

sends a first series of state-related numerical values, each numerical value reflecting information relating to the value of the first state variable at a different point t_m in simulation time in the first model; and

a second executing process that:

receives said first series of state-related numerical values from said first executing process without said first series of state-related numerical values passing through a central communication process;

implements a second continuous-time model to simulate a second physical subsystem, the second model being programmed in a second language and taking as an input values from said first series of state-related numerical values; and

outputs data representative of a state of the second continuous-time model.

2. (Previously Presented) The system of claim 1, wherein:

the second model has a second state variable;

said second process further sends a second series of state-related numerical values, each numerical value reflecting information relating to the value of the second state variable at a different point t_n in simulation time in the first model;

said first process further receives said second series of state-related numerical values; and

the first model takes as an input the value of the second state variable from said second series of state-related numerical values.

3. (Previously Presented) The system of claim 2, wherein for at least a first numerical value in said first series of state-related numerical values, said first numerical value reflecting information relating to the value of the first state variable at point t_1 in simulation time in the first model, there is a second numerical value in said second series of state-related numerical values that reflects the value of the second state variable at point t_1 in simulation time in the first model.

4. (Previously Presented) The system of claim 2, wherein for at least a first numerical value in a series of state-related numerical values, said first numerical value reflecting the value of the first state variable at point t_1 in simulation time, there is no second numerical value in said second series of state-related numerical values that reflects the value of the second state variable at point t_1 in simulation time.

5. (Previously Presented) The system of claim 1, wherein:

said first series of state-related numerical values comprises

a first numerical value reflecting information relating to the value of the first state variable at time t_1 in simulation time in the first model;

a second numerical value reflecting information relating to the value of the first state variable at time t_2 in simulation time in the first model; and

a third numerical value reflecting information relating to the value of the first state variable at time t_3 in simulation time in the first model; and

wherein the first numerical value, second numerical value, and third numerical value are consecutive within said first series of state-related numerical values; and $t_2-t_1 = t_3-t_2$.

6. (Previously Presented) The system of claim 1, wherein:

said first series of state-related numerical values comprises

a first numerical value reflecting information relating to the value of the first state variable at time t_1 in simulation time in the first model;

a second numerical value reflecting information relating to the value of the first state variable at time t_2 in simulation time in the first model; and

a third numerical value reflecting information relating to the value of the first state variable at time t_3 in simulation time in the first model; and

wherein the first numerical value, second numerical value, and third numerical value are consecutive within said first series of state-related messages; and $t_2-t_1 \neq t_3-t_2$.

7. (Previously Presented) The system of claim 1, wherein:

said first executing process exposes a first interface for the first model, where said first interface:

prevents access by said second executing process to a first substantial portion of the first model, and

allows access by said second executing process to a second substantial portion of the first model; and

said second executing process exposes a second interface for the second model, where said second interface:

prevents access by said first executing process to a first substantial portion of the second model, and

allows access by said first executing process to a second substantial portion of the second model.

8. (Previously Presented) The system of claim 1, wherein

the first model has a third state variable;

each numerical value in said first series of state-related numerical values further reflects information relating to the value of the third state variable at point t_m in simulation time; and

the second model also takes the third state variable as an input from said first series of state-related numerical values.

9. (Previously Presented) A computer-implemented method for simulating operation of a physical system having a plurality of physical subsystems, comprising:

simulating a first physical subsystem with a first continuous-time simulation on a first physical computing device;

accepting a request for export of information relating to a number n of state-related variables that characterize the state of the first physical subsystem in said simulating;

sending a first series of state-related messages, each message containing information relating to the value of at least one of the n state-related variables;

simulating a second physical subsystem with a second continuous-time simulation on a second physical computing device;

receiving in said second continuous-time simulation said first series of state-related messages from said first continuous-time simulation without said first series of state-related messages passing through a central communication process; and

outputing data representative of a state of the second continuous-time simulation; wherein:

the first physical subsystem interacts with the second physical subsystem; and

the at least one state-related variable characterizes at least a portion of the interaction between the first physical subsystem and the second physical subsystem.

10. (Original) The method of claim 9, wherein:

said simulating a first physical subsystem is performed on a first processor, and

said simulating a second physical subsystem is performed on the first processor.

11. (Original) The method of claim 9, wherein:

said simulating a first physical subsystem is performed on a first processor, and

said simulating a second physical subsystem is performed on a second processor.

12. (Previously Presented) The method of claim 9, wherein the number n is at least two.

13. (Previously Presented) The method of claim 12, wherein the number n is at least four.

14. - 15. (Cancelled)

16. (Previously Presented) The method of claim 12, further comprising sending a third series of state-related numerical values, wherein:

at least one numerical value in the first series of state-related numerical values contains information relating to the values of a first proper subset of the set containing all *n* state-related variables;

at least one numerical value in the third series of state-related numerical values contains information relating to the values of a second proper subset of the set containing all *n* state variables, and

the second proper subset is different from the first proper subset.

17. (Previously Presented) The method of claim 16, wherein:

the messages in the first series of state-related numerical values are sampled at a first rate in simulation time in the first model;

the numerical values in the third series of state-related numerical values are sampled at a second rate in simulation time in the first model; and

the first rate and the second rate are not equal.

18. (Previously Presented) The method of claim 16, wherein:

the numerical values in the first series of state-related numerical values are sampled at a first rate in simulation time in the first model;

the numerical values in the third series of state-related numerical values are sampled at a second rate in simulation time in the first model; and

the first rate and the second rate are equal.

19. (Previously Presented) The method of claim 9, wherein:

a given process makes the request; and

said sending directs the first series of state-related numerical values to a process different from the given process.

20. (Previously Presented) The method of claim 9, further comprising:

receiving the first series of state-related numerical values in a first output process in communication with a first output device; and

sending to the first output device a first set of information carried by a plurality of numerical values in the first series of state-related numerical values; and

wherein the first output device is in communication with the first output process.

21. - 23. (Cancelled)

24. (Previously Presented) The method of claim 20, wherein said displaying comprises graphing a function of the first state-related variable versus an independent variable.

25. (Previously Presented) The method of claim 20, further comprising:

receiving a second series of state-related numerical values in the first output process; and

sending to the first output device a second set of information represented by a plurality of numerical values in the second series of state-related numerical values; and

wherein said sending steps comprise outputting time information associating the first set of information and the second set of information with a system time.

26. (Previously Presented) The method of claim 20, further comprising:

receiving a second series of state-related numerical values in a second output process, which is in communication with a second output device; and

outputting to the second output device a second set of information carried by a plurality of numerical values in the second series of state-related numerical values;

wherein said sending comprises associating the first set of information with a system time; and

said outputting comprises associating the second set of information with an independent variable.

27. (Canceled)

28. (Canceled)

29. (Previously Presented) The system of claim 1, wherein the first model is a state-space model.

30. (Canceled)

31. (Previously Presented) The system of claim 1, wherein:

the implementation of the first continuous-time model uses a first numerical integration technique, and

the implementation of the second continuous-time model uses a second numerical integration technique.

32. (Previously Presented) The system of claim 1, wherein:

the first executing process and the second executing process are executed on a first processor.

33. (Previously Presented) The system of claim 1, wherein:

the first executing process is executed on a first processor, and

the second executing process is executed on a second processor.

34. (Previously Presented) The method of claim 16, wherein:

the second series of state-related numerical values is sent to a first destination; and

the third series of state-related numerical values is sent to the first destination.

35. (Previously Presented) The method of claim 16, wherein:

the second series of state-related numerical values is sent to a first destination; and

the third series of state-related numerical values is sent to a second destination.

36. (Previously Presented) The system of claim 24, wherein the independent variable is time.

37. (Previously Presented) The system of claim 24, wherein the independent variable is one of the *n* state-related variables.

38. (Previously Presented) The system of claim 24, wherein the independent variable is a state-related variable in the simulation of the second physical subsystem.

39. (Previously Presented) A computer-implemented system for simulating a physical system, the physical system comprising two or more subsystems, the computing system comprising a plurality *n* of computing devices, each simulating a subsystem of the physical system, wherein:

at least one subsystem is simulated by computationally solving a system of ordinary differential equations;

each subsystem simulation either

provides a series of output messages to another subsystem simulation, where the output messages encode state-related data from the subsystem, or

receives a series of input messages from another subsystem simulation, where the input messages encode state-related data from the other subsystem simulation, or

both provides a series of output messages to another subsystem simulation, where the output messages encode state-related data from the subsystem, and receives a series of input messages from another subsystem simulation, where the input messages encode state-related data from the other subsystem simulation; and

the computing system provides an output signal from at least one of the subsystem simulations;

wherein the simulation of the physical system occurs with a speed greater than $O(n)$ times the speed of the simulation using a single one of the computing devices.

40. (Previously Presented) In a computer-implemented distributed simulation of a physical system, the improvement comprising:

running a continuous-time simulation of the physical system in a set of n computing devices; and

outputting data representative of a state of the physical system simulation;

wherein the running occurs with a speed greater than $O(n)$ times the speed of the simulation using a single one of the computing devices.

41. (Previously Presented) The system of claim 40, wherein the running occurs with a speed greater than $O(n^2)$ times the speed of the simulation using a single one of the computing devices.

42. (Previously Presented) The system of claim 40, wherein the running occurs with a speed that is at least $O(n^3)$ times the speed of the simulation using a single one of the computing devices.

43. (Previously Presented) The system of claim 39, wherein the running occurs with a speed greater than $O(n^2)$ times the speed of the simulation using a single one of the computing devices.

44. (Previously Presented) The system of claim 39, wherein the running occurs with a speed that is at least $O(n^3)$ times the speed of the simulation using a single one of the computing devices.